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# ARMY

INFORMATION

# DIGEST



OFFICIAL U. S. ARMY MONTHLY MAGAZINE



# **ARMY INFORMATION DIGEST**

**OFFICIAL MONTHLY  
MAGAZINE  
of the  
DEPARTMENT OF THE  
ARMY**

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.

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FIFTEEN YEARS AGO, in August 1940, an experimental test platoon of Army parachutists made history when they jumped from a B-18 bomber at Fort Benning, Georgia. Since then, the Army's airborne activities have expanded to become a vital and integral part of Army operations, both in training and in combat. On the front cover, paratroopers of the 82d Airborne Division descend in a mass jump during a recent training exercise. By introducing the ever-present possibility of surprise vertical envelopment, actions such as this have brought a third dimension to the battlefield.

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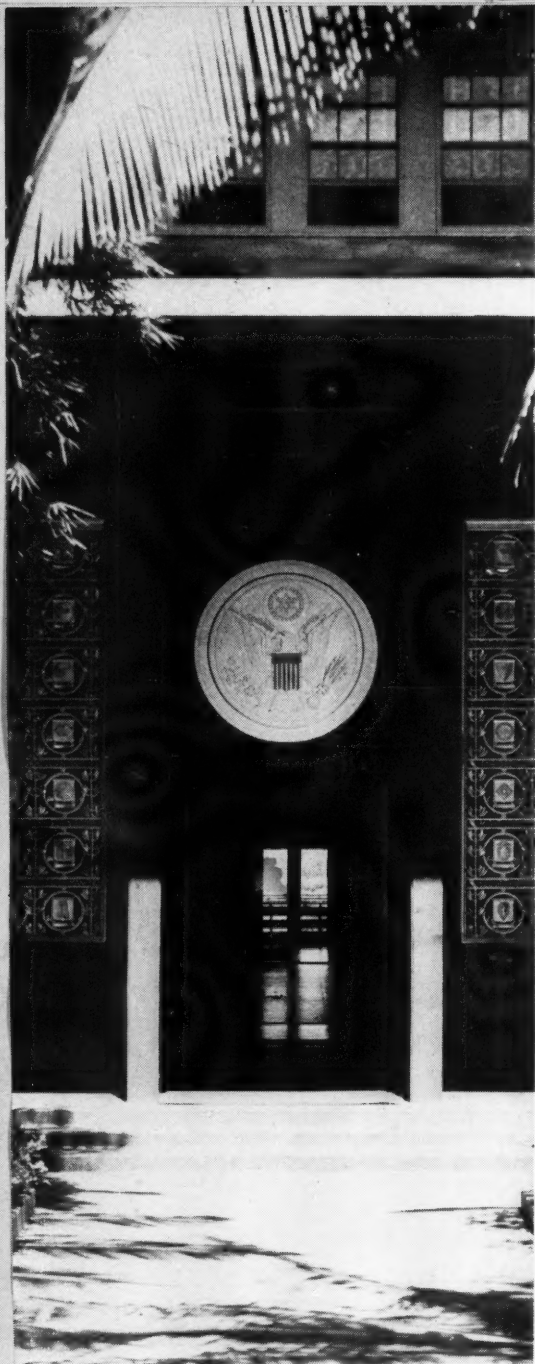
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*Main entrance to Richardson Hall,  
Headquarters, USArPac, at  
Fort Shafter.*

**U. S. Army Pacific**

# Crossroads

**Edward J. Reich**

**I**F YOU are ordered to duty with U. S. Army, Pacific Command, you will most probably be assigned to Oahu, the capital island of the Hawaiian chain.

After a pleasant and relaxing four-and-one-half-day ocean voyage from San Francisco, you will see the glistening white sands of Waikiki Beach set against a backdrop of the towering lush-green Koolau mountains. You will see the Royal Hawaiian, Hawaii's coral pink queen of hotels, dominating a cluster of magnificent beach resorts.

As you debark, friends will drape fragrant flower leis over your shoulders to bid you "Aloha" in true Polynesian fashion.

Warm welcome and scenic splendor, however, will not obscure the fact that you have a serious role to play in rendering secure these strategic islands—located 2,090 miles southwest of San Francisco and 3,394 miles east of Yokohama—which have become the "crossroads of the Pacific."

*EDWARD J. REICH is News Chief, Public Information Division, Headquarters, United States Army, Pacific.*



Pacific Command

# Islands of the Pacific

Although the many reefs and shoals included in the Hawaiian chain make it the longest in the world, Hawaii is known for its eight main islands that cover a radius of 300 miles. These islands are, in order of size, Hawaii, Maui, Oahu, Kauai, Molokai, Lanai, Niihau and Kahoolawe.

The total area of the islands is 6,435 square miles, or greater in area than Delaware, Connecticut and Rhode Island.

ALTHOUGH our Nation's interest in the Hawaiian Islands dates back as far as 1849, it was not until Lt. Gen. John McAllister Schofield—a brilliant general who served with distinction under Gen-

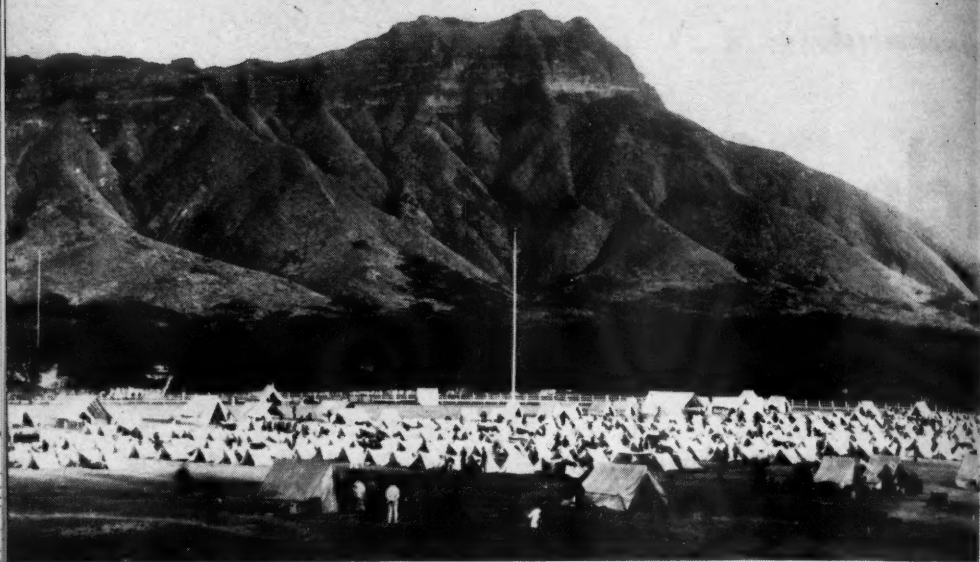
eral Sherman during the Civil War and later took command of Richmond after Lee's surrender—visited these far-flung islands in 1872 that the importance of Hawaii as a military outpost was first established.

General Schofield came to the islands to conduct a survey of the Pearl Harbor area. What he saw during that visit later helped influence the Congress in annexing the islands and provided the impetus to develop them into a formidable military outpost.

In 1898 when the United States was at war with Spain and annexation of the islands was an important issue, General Schofield appeared before the Congress. In a dramatic appeal for immediate annexation,

*Macomb Gate,  
main entrance  
to Schofield  
Barracks.*





*Famed Diamond Head looms over the tents at Camp McKinley, first Army post established in Hawaii shortly after annexation of the Islands in 1898.*

and fortification of the islands he declared:

"It is obvious that if we do not hold these islands ourselves we cannot expect the neutrals in war to prevent other belligerents from occupying them; nor can the inhabitants themselves prevent such occupation.

"In short, in a war we should need a larger navy to defend the Pacific coast because we should not only have to defend our own coast, but to prevent, by naval force, an enemy from occupying the Islands.

"In my opinion," he emphasized, "it is not possible for any Trans-Pacific country to invade our Pacific coast without occupying Hawaii as a base."

WHEN annexation was accomplished on 12 August 1898, the United States lost no time in developing the islands into a military defense outpost.

Four days after the Stars and

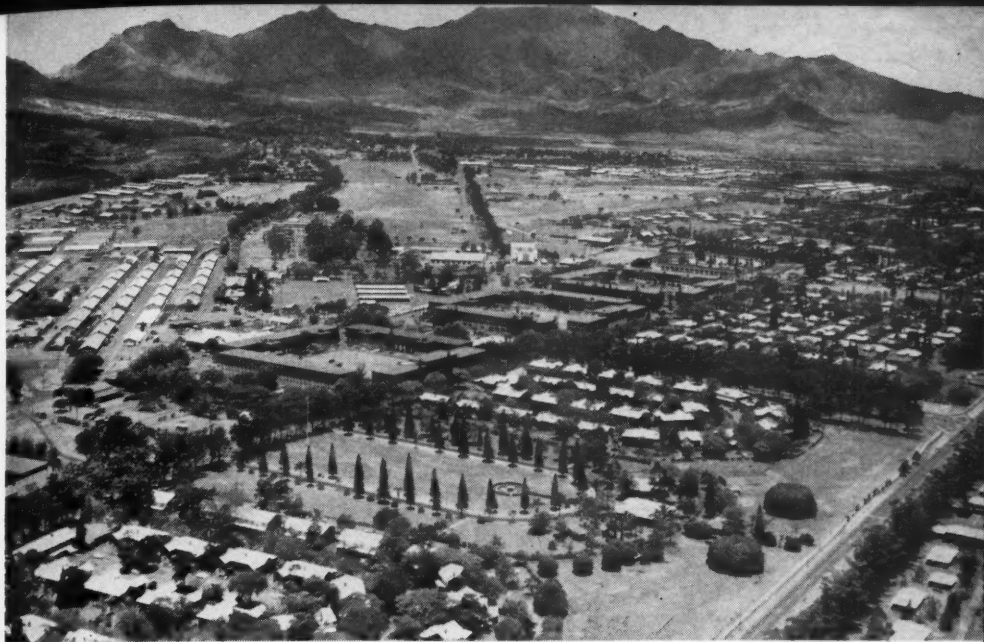
Stripes were raised over the royal palace, American troops came ashore to establish the first Army post. Located on the slopes of famed Diamond Head, the camp was appropriately named Fort McKinley, in honor of the president in office.

From this modest beginning, the Army in Hawaii has expanded under the impact of two major wars and the Korean conflict to become a multimillion dollar base of operations for American defense forces in the entire Pacific Ocean area.

The hub of Army defense activities in the Hawaiian Islands is located at Fort Shafter, a beautiful palm-fringed military post on the outskirts of Honolulu, the principal city of the Hawaiian chain.

During World War II, Fort Shafter served as the vital nerve center for carrying out many of the combat operations against the Japanese.

The Korean conflict and the



*Today permanent buildings and modern facilities mark Schofield Barracks, present home of the 25th Infantry Division.*

strengthening of the United States as a military power in the Far East and Asia have expanded the scope of the Army's mission. Increasingly the islands have become the communications center of Pacific defenses with broad influence far beyond the Hawaiian perimeter.

THE United States Army, Pacific, or USArPac as it is referred to within the command, is the Army component of the Joint Pacific Command under Admiral Felix B. Stump, Commander in Chief, Pacific.

Primarily an ocean area command, it is the largest of the unified commands in its area of responsibility, touching on four continents and operating in three major oceans—the Pacific, Arctic and Indian. Included in this area are Formosa and Indo-China—two hot spots in today's cold war.

Specific mission of the U. S. Army, Pacific, is to furnish Army

support to any area within the Pacific command; to be immediately expandable in event of emergency, and to maintain its capacity for staging and supporting forces moving into the area.

Lt. Gen. Bruce C. Clarke, as Commanding General of USArPac, also heads the Hawaiian Defense Command, a joint command within the Pacific Command structure. Its principal mission is the defense of the islands of the Hawaiian chain.

The Hawaiian Defense Command with the assistance of the U. S. Army, Pacific, the 14th Naval District at Pearl Harbor, and the recently activated U. S. Pacific Air Force also assists in discharging disaster relief, civil defense and civil disturbance responsibilities.

From its headquarters at Fort Shafter the Army maintains two major posts and four subposts, all located on the island of Oahu.

FORT SHAFTER, the first major

army post in Hawaii, was established in 1905. It is named in honor of Maj. Gen. William R. Shafter, leader of America's troops in Cuba in 1898.

In its headquarters building, familiarly known as the "Pineapple Pentagon," are located all the general staff divisions, special and administrative staffs, and technical and operational headquarters.

During its 47-year history, the post has felt the impact of sudden changes from peace to war. On Pearl Harbor day 20,000 soldiers were garrisoned here. Before the war ended in the Pacific, upwards of one million men from every state in the United States had passed through its gates.

The Hawaiian Infantry Training Center, established at Schofield



*The strategic location of Tripler Army Hospital was demonstrated when thousands of air evacuees were brought here during the Korean conflict.*

In and around Fort Shafter the Army maintains a network of depots and shops, including the Hawaiian Ordnance Depot, Engineer shops, Signal Service depot, and the Honolulu Army Port.

LOCATED high on the Leilehua Plateau some 20 miles from Fort Shafter is Schofield Barracks. This sprawling 15,288 acre post, established late in 1908, has long been regarded as the largest oversea Army post and is unequalled as a year-round military training area.

at the outset of the Korean conflict, furnished more than 20,000 infantry replacements for Army combat units in the Far East.

The post is now the home of the famed 25th Infantry "Tropic Lightning" Division which rotated to Hawaii from Korea in the fall of 1954. The Division is commanded by Maj. Gen. Herbert B. Powell.

Each summer U. S. Army reservists and Hawaii National Guardsmen use the facilities at Schofield Barracks for their two-week summer training periods.



TO CARE for the medical needs of Armed Forces personnel in the Pacific Ocean area, the Army operates Tripler Army Hospital, a 14-story, completely modern 1,500-bed medical center located on the slopes of the Koolau mountains.

A complete Army post, the 375-acre installation includes the main group of hospital buildings, a separate neuropsychiatric building, enlisted men's barracks, nurses quarters and outstanding recreational facilities.

The strategic location of Tripler in the Hawaiian Islands was brought home vividly during the Korean conflict when over 65,000 air evacuees were flown here for a brief rest and medical treatment before continuing on to the mainland.

The hospital honors the name and work of Brigadier General Charles Stuart Tripler, a distinguished medical officer who served with the Army of the Potomac during the Civil War.

ANOTHER major installation administered by the U. S. Army, Pacific, is the National Memorial Cemetery of the Pacific located in Punchbowl Crater, a long-extinct volcano. Dominating the heart of Honolulu, yet majestically apart from it, the 112-acre shrine is the resting place for some 14,000 dead of World War II and the Korean conflict.

Dedicated on 2 September 1949, the fourth anniversary of V-J Day, it was the first national cemetery to be established in the Pacific area and is today the largest in area of three such cemeteries supervised by the Army outside the continental limits of the United States.

FOUR SMALL POSTS under the jurisdiction and control of the Army in Hawaii include Fort Ruger, located on the slopes of famed Diamond Head, now home of the Hawaii National Guard; and Fort DeRussy, a former World War I artillery post in Waikiki which serves as the headquarters for Hawaii's Army Reserve units and as an Armed Forces Recreation Center.

Fort Kamehameha, a former anti-aircraft post and World War II staging area, is used almost exclusively for housing army personnel. Fort Armstrong, a prominent World War I coast artillery station in Honolulu Harbor, is now the headquarters for the Honolulu Area Engineer.

#### GETTING ACQUAINTED

FOR THE soldier newly arrived on Oahu, one of the first differences apparent between Hawaii and the United States mainland is the method of telling directions. The words north, south, east, and west are normally not used in pointing out a particular location.

Instead, these words soon become familiar to the visitor in Hawaii: *mauka*, which means toward the mountains; *makai*, toward the sea; *ewa*, meaning toward the town of Ewa, and *waikiki*, meaning toward Waikiki Beach.

From the tropic, palm-lined beaches to the snow-capped volcanoes, the islands of Hawaii present an unequalled scenic paradise. While the beaches of Waikiki and its famed hotel resorts have proved the main attraction for tourists, each island of the Hawaiian group possesses scenic beauty distinctive from all the rest.



Today, modern airlines operating out of Honolulu on regular schedules carry visitors to any island in the chain within 30 minutes to one hour.

Ranking next to Waikiki beach as an attraction is famed Nuuanu Pali on the Island of Oahu. Pali is the Hawaiian word for cliff, but the Pali is generally referred to as the pass in the Koolau mountain range which separates windward from leeward Oahu. It was over this precipitous cliff that Kamehameha the Great pushed an enemy army to its death, thus conquering the island and uniting it with Maui and Hawaii.

THE Island of Hawaii, variously referred to as the Big Island, the

Volcano Island, or the Orchid Island, is probably the most versatile scenic island of the Hawaiian chain.

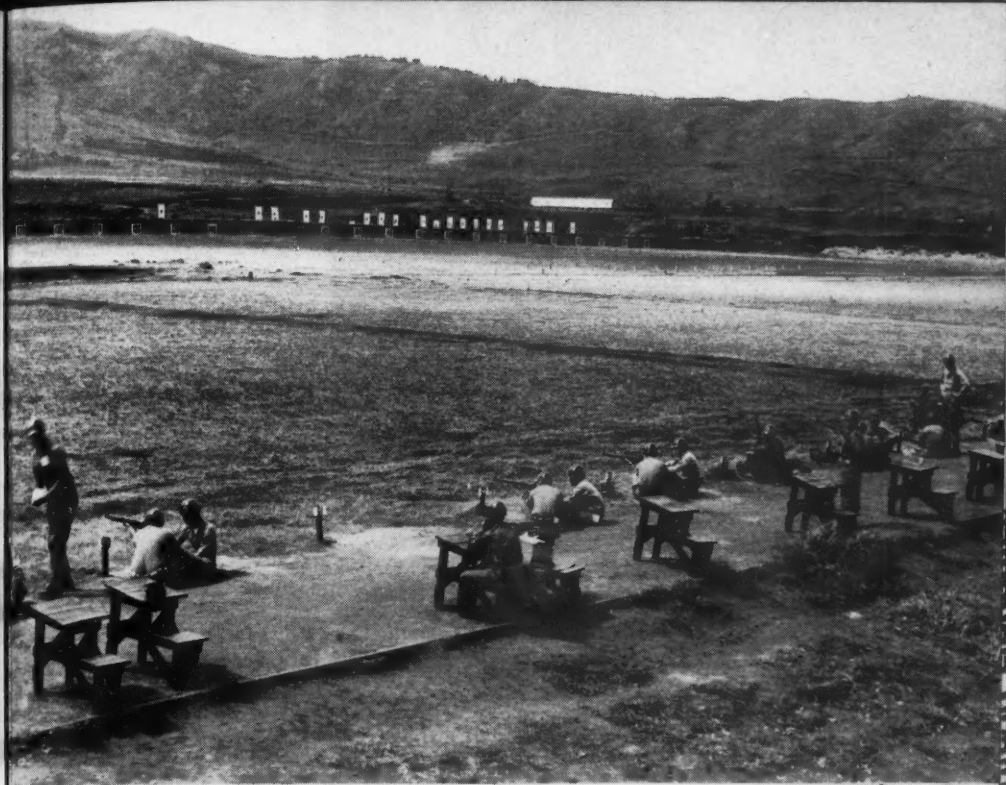
On it are found the periodically active volcanoes, Mauna Loa and Kilauea, and the 13,825-foot snow-capped Mauna Kea, the highest peak in the Pacific.

The Big Island is also known for its Hawaii National Park, most far-flung member of the American National park chain. Within the park flourish gigantic fern forests, ancient black lava flows, sulphur and steam banks and huge lava tubes.

Maui island is known scenically for mighty Haleakala, a dormant crater 10,025 feet high and large enough to hold all of New York City.

*Reservists and Hawaii National Guardsmen, as well as Regular troops, use facilities of Schofield Barracks for training purposes.*





*Rifle ranges at Schofield Barracks are in constant use by men of the 25th "Tropical Lightning" Division now stationed there.*

Kauai, the northernmost large island of the Hawaiian chain, is called the Garden Island because of its natural greenery and rich soil. Its greatest scenic attraction is Waimea Canyon, sometimes called the "Grand Canyon of the Pacific."

Molokai, the fifth largest island of the group, was formed from three volcanoes. The windward side of the island is an almost continuous towering cliff intersected by deep valleys inaccessible except by small boats. These palis or cliffs, reaching to 3,600 feet, provide the island with some of Hawaii's most majestic scenery.

The island of Molokai is also famed for the Catholic priest Father Damien, the "Martyr of Molokai," who devoted his life to ministering and caring for lepers on Kalaupapa peninsula.

Two of Hawaii's eight main islands, Lanai and Niihau, are privately owned. Lanai is owned by the Hawaiian Pineapple Company and nearly all of its 141 square miles is used for raising pineapples. Niihau is not open to tourist travel.

Kahoolawe, the smallest of the chain, is a barren uninhabited island. It was used as a penal colony in monarchical days and as a bombing target area for military planes during World War II.

Scarcely a day passes in Hawaii without sunshine, although the sky is usually dotted with scattered billowy white clouds over the mountains. The mean temperature varies from a low of 70 degrees in February to a high of 78 degrees in August. In an average year, Honolulu has 110 clear, 177 partly cloudy and 78 cloudy days.



*Diamond Head  
is a familiar  
Hawaii landmark.*

### RECREATION

THROUGHOUT the year swimming is popular at a number of fine sandy beaches. By far the most important recreation for soldiers, however, is the well rounded program of organized athletics. Included are football, basketball, baseball, boxing and volley ball.

Special emphasis is put on competition at the lowest unit level to permit maximum participation.

With weather suited to year-round boating, deep sea fishing off the coast of Oahu knows no "off-season." During one day's outing

it is not at all unusual for fishing parties to come home with a string of *ahi* (tuna), *mahimahi* (dolphin), *au* (swordfish), *ono* (giant mackerel), or Hawaii's colorful *humuhumunukunuaupa'a* (the trigger fish with the snout and grunt of a pig).

For the hunter, each of the islands affords wild pig and goat and dove. Pheasant and deer abound on the Big Island of Hawaii.

In addition to its varied sports and athletic program, the Pacific Army Command, through its Special Service Division, conducts a well-rounded recreational program.

*Nuuanu Pali is  
one of the scenic  
spots of the  
Islands.*



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*A popular gathering place for servicemen is the Armed Forces Recreation Center, Waikiki.*



*Recreational facilities at Schofield Barracks include this boxing arena, bowling alley and post theater.*

*A cooling swim in the post pool attracts servicemen at Schofield Barracks.*





Enlisted men's service clubs staffed by qualified club directors are located at each Army post on Oahu. Each club offers a varied program of entertainment including dances, special holiday shows with professional entertainment, recreation rooms complete with pool tables and games and well stocked libraries.

HAWAII'S richly laden tradition, culture and history is recreated during a series of colorful pageants, festivals and special events which the visitor finds entertaining as well as educational.

Aloha Week, probably the best known of all Hawaiian observances, is a full seven days of pageantry, parades, street dancing and merry-making. It is held late in October each year.

The *Hukilau*, Hawaiian word for shore fishing with a net, is an event frequently staged for the *malihini*, or newcomer to the Islands. A huge net is laid in a semicircle and then drawn onto the beach by native Hawaiians, often with the cooperation of spectators. The *hukilau* usually provides an excuse for merry-making, music, dancing and feasting.

Sometime or another during your tour of duty in Hawaii, you will no doubt attend a *luau*, a traditional Hawaiian feast, consisting of pigs roasted in the *imu* (underground oven) with sweet potatoes and fish wrapped in the leaves of the *ti* plant. The feast also features a variety of side dishes such as raw shell fish and salmon, fresh pineapple and coconut pudding.

#### EDUCATION OFF DUTY

UNLIMITED opportunities exist

for the serviceman to continue his educational development to meet Army requirements and satisfy his own intellectual interests.

Under the direction of the Troop Information-Education Division, education centers are maintained at Schofield Barracks, Fort Shafter, and Tripler Army Hospital. Qualified civilian educational advisors are available for private and group consultation and to provide vocational and educational guidance.

The Army in Hawaii draws heavily on the many qualified civilian instructors in Honolulu to present night group study classes at various installations. These voluntary classes are organized in a wide variety of subjects on basic, intermediate, high school, technical and college levels.

Through close working agreements with the various Territorial education departments and institutions of learning, the USArPac Command provides its personnel special courses at high schools and the University of Hawaii.

At the University of Hawaii, service personnel may work toward a baccalaureate degree. Moreover, courses offered by the University's extension division carry full resident credit.

The University of Hawaii Extension Division currently is conducting courses in Business Law and Accounting for service personnel in the Fort Shafter area and similar courses at Schofield Barracks. In many cases students may accumulate credits toward a degree by taking examinations.

USAFI is also a big business within USArPac. A USAFI headquarters is located at Fort Shafter



where trained educational advisers are available to assist service personnel in selecting correspondence courses for off-duty study. Testing stations are operated at Fort Shafter and Schofield Barracks.

In keeping with current priorities established by the Department of the Army, officers are being encouraged to attain two year college educational levels and non-commissioned officers in the command are required to complete eighth grade level.

The Army-wide program for raising over-all efficiency by increasing the maximum effectiveness of the individual soldier is receiving considerable impetus through the comprehensive Information and Education Division program within the Pacific Army Command. By providing maximum individual opportunities for self-improvement, the Army continues to enhance the efficiency of the team members engaged in defense of our "Crossroads of the Pacific."

*—They teach how to teach others at—*

## Hawaii's First NCO Academy

**A**NOTHER step in the program to increase the sense of responsibility and broaden the knowledge of the noncommissioned officer corps, has been taken by the 25th Infantry (Tropic Lightning) Division with the establishment of an NCO Academy at Schofield Barracks, Hawaii.

Lieutenant General Bruce C. Clarke, Pacific Commander, established the Academy along lines of a similar center which he had set up in Europe in 1949. Since then the NCO Academy idea has spread to schools in the United States and Korea. It also has been adopted by the United States Air Force.

The 25th Infantry Division's Academy operates on the basic principle that it must satisfy unit commanders that they are getting value received for the loss of time of their key men as students and instructors. Specifically the courses

teach how to lead and how to teach others, with the object of establishing principles and standards of training for small units.

THE four-week course consists of 15 subjects, including leadership, methods of instruction, map reading, supply economy and company administration, vehicle maintenance, military justice, intelligence, interior guard, communications, artillery instruction, military courtesy, weapons instruction, tactics, first aid, and Division history.

Students are selected by a three man board of officers who designate outstanding soldiers recommended for attendance by their company commanders. Each class has a quota of 100, and as more facilities become available, it is planned to run four classes simultaneously with starting dates for each spaced a week apart.

A message from - -

**GENERAL MAXWELL D. TAYLOR**  
**Chief of Staff, United States Army**

TO THE MEMBERS OF THE UNITED STATES ARMY

In great soberness of spirit I have taken the oath of office of Chief of Staff of the United States Army. Because of the importance of the mission of the Army to the welfare of the nation and of the free world, this office entails heavy responsibilities for the incumbent. In such times as these, the Army must be well trained, well equipped and well led by men of courage and of vision if it is to provide security of the quality and degree which the situation requires. It must be a flexible, all-purpose weapon ready for all emergencies, large and small. Its tactics and procedures require constant scrutiny to assure that they anticipate to the degree which human foresight permits the requirements of possible conflict in the future. Such are the challenging obligations which rest upon all of us who wear the Army uniform.

A Chief of Staff would have reason to pause before taking up such responsibilities were it not for the ability and loyalty which abound in the ranks of the Army. Ours is a proud institution to which it is an honor to belong, an institution of great material and spiritual resources. Reinforced by the knowledge of these reserves of strength which stem from every corner of the world where the Army serves, I undertake the task of Chief of Staff with confidence that the United States Army will continue to meet the requirements of the future in the same way that it has met the challenges of the past.



MAXWELL D. TAYLOR  
General, U. S. Army  
Chief of Staff

**G**ENERAL MAXWELL D. TAYLOR, until recently Commander-in-Chief of both the Far East Command and the United Nations Command, has been appointed Chief of Staff, United States Army. He succeeds General Matthew B. Ridgway who retired 30 June after more than 38 years of service.

A pioneer in the development of the Army's first Airborne divisions, General Taylor was commissioned a second lieutenant in the Corps of Engineers upon graduation from the United States Military Academy in 1922. Among his early assignments, he was language instructor at the Academy and served at various oversea posts in Paris, Tokyo, Peking, and Latin America. He was graduated from the Engineer School in 1923, the Field Artillery School in 1933, the Command and General Staff School in 1935, and the Army War College in 1940.

During World War II as artillery commander of the 82d Airborne Division, he took part in the Sicilian and Italian campaigns, and was senior U. S. member of the Allied Control Commission in contact with the Italian Government. As commanding general of the 101st Airborne Division, he led that unit in the airborne invasions of Normandy and Holland and in the campaigns of the Ardennes and Central Europe.

General Taylor was named Superintendent of the U. S. Military Academy in 1945. He was assigned



GENERAL MAXWELL D. TAYLOR

to the European Command as chief of staff in 1949, later becoming U.S. Commander of Berlin. In 1951 he was appointed Deputy Chief of Staff for Operations and Administration of the Army.

In January 1953, General Taylor arrived in the Far East and the following month took command of the Eighth U.S. Army in Korea. In November 1954, he assumed command of all ground forces in Japan, Okinawa and Korea as Commanding General of the combined Army Forces, Far East and Eighth U.S. Army, with main headquarters at Camp Zama, Japan, and a forward command post in Seoul, Korea.

On 1 April 1955 he was named Commander-in-Chief of the Far East and United Nations Commands. On 5 June he was succeeded by General L. L. Lemnitzer, who follows General Taylor as Army Forces, Far East/Eighth Army commander.

# Waging a Battle by C

W. W. Le

**S**UPPOSE that two friendly tanks on a reconnaissance mission are suddenly confronted by two enemy tanks at ranges of 500 and 600 yards. Both are in a position to fire at either one of the enemy tanks. Should they concentrate their fire on the closer enemy tank first with the possibility of over-killing it, or should each try to knock out one of the enemy tanks?

Or suppose a designer devises a new tank which has twice the power of an existing one. However, it only has half the mobility of the present tank and it costs twice as much to produce. Should the Army go into production with the new model or should it continue to make more of the old one?

Or suppose Intelligence learns that a potential enemy has just tested a new prototype of a revolutionary tank. What effect could this new weapon have on the battlefield and what measures can be taken to counteract it?

These far from hypothetical examples give an idea of the type of

questions that can be answered by simulating a battle on a high-speed digital computer.

ESSENTIALLY, the simulation of a battle by statistical means is a problem in operations research. If it can be determined, for example, which weapon or tactic has a higher probability of success, that fact can be applied to make maximum use of available forces in the field.

Army Ordnance's ORDVAC (Ordnance Discrete Variable Automatic Computer) is one of the three high-speed electronic digital computers at the Ballistic Research Laboratories at Aberdeen Proving Ground currently engaged in the solution of battle simulation problems and many other important problems facing the Ordnance Corps.

In effect, this electronic high-speed digital computer differs from a desk calculator only in three respects. First, it can carry out additions, subtractions, multiplications and divisions at very high speed. Current computational speeds range to about ten thousand operations per second.

In addition, hundreds of millions of these arithmetic operations can be carried on without any outside human interference. In other

---

*W. W. LEUTERT has developed a method of simulating a battle using high speed computers at the Ballistic Research Laboratories, Aberdeen Proving Ground, Maryland. Similar work has been carried on by other research establishments, notably the Rand Corporation and Operations Research Office.*

# by Computing Machine

W. W. Leutert

words, the computer can store internally a set of instructions and carry them out at electronic speeds.

Third, the computer can make simple decisions. Based on the sign of a computed or stored number, the computer can follow two alternative courses of action. Thus it can decide, for example, what the Blue force should do at any given moment. This decision may be based on the Blue losses up to that time and the battle plan which the Blue commander has worked out in advance of the engagements.

INITIALLY, some simplifying assumptions have to be made whenever an operation as complex as a battle is to be analyzed mathematically. First of all, the continuity of time must be abandoned. A high-speed digital computer carries out its operations in sequence, *i.e.*, one at a time. Thus the battle is divided into moments. At each moment the computer determines sequentially the action of each active participant in the battle during that given moment. Then time moves on and the next moment of battle is considered.

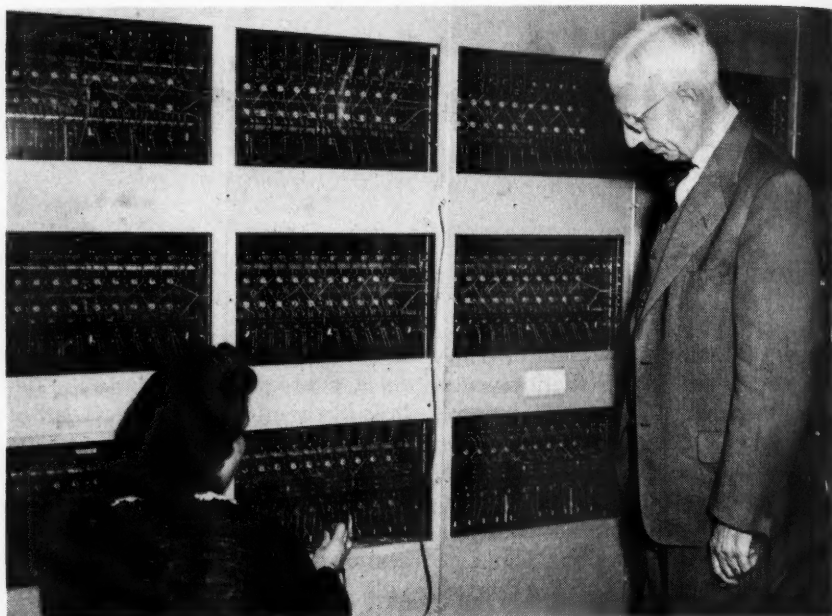
The continuity of space cannot be maintained either. The computer must store information about the combat area in its limited

memory in the form of numbers. As a consequence, all minute details of the map must be left out of the model of such a battle. The combat area is broken up into small units, and the computer stores only information with regard to one point of any unit.

It is assumed further that the individual units can be chosen so small in size that any object within each can be regarded as being located at its center without making an appreciable error. Yet many events do not necessarily occur at a given time. The computer accordingly must be capable of generating random numbers in order to decide whether or not an event really does occur at a given time. This is what mathematicians call the Monte Carlo method.

AS AN example, consider the time it takes to fire the first round after a target has been chosen. Depending on the tank crews and the relative positions of the two opponents, visibility and many other factors can only be accounted for by assuming a certain probability that the first round will be fired after a certain number of seconds. In a given tactical situation there may exist a certain probability that a commander will select one of sev-





*A mathematician at Aberdeen Proving Ground places an "order" on the ORDVAC machine as given by the chief of the Computing Laboratory.*

eral alternative courses of action. A probability or a weight is assigned to each one of the possible alternatives and then it can be decided with random numbers which one is actually going to be selected in any particular instance.

Most modern high-speed digital computers store their instructions in a limited "memory" in the form of numbers. Therefore the computations to be carried out must be highly repetitive. The mathematical formulas to be evaluated should be expressible as a simple combination of the four arithmetic operations—addition, subtraction, multiplication, division—in order to reduce computing time to a minimum.

The computational model of a battle developed at the Ballistic Research Laboratories tries to follow

a medium course between what is theoretically possible and what is reasonable and efficient from the standpoint of the machine's memory utilization and computing time.

The combat area is divided into small regular hexagons, each shaped like an individual cell in a honeycomb. As many as half a million hexagons may be used to represent a battlefield. The center of each is called a grid point.

ONE method of simulating a battle situation reserves one memory cell of the computer or a fraction of such a memory cell to store information about a given hexagon. Whenever an active object (tank, airplane, infantry platoon) moves from one hexagon to an adjacent one, the corresponding information has to be transferred from one

memory cell to another one.

If we want to know, for instance, how many Red tanks are still alive at any given time, the computer must scan the whole combat area to find the answer to this question. This method is time consuming and uses a large amount of memory space.

The second method—the one adapted in the Ballistic Research Laboratories model—reserves one or more memory cells for each active or passive object in the combat area. Coordinates of the location of each object are carried in its cell. Whenever an active object moves, its coordinates are changed.

This means that in order to find Red tanks still alive the computer has only to scan a small portion of the memory which contains only information about Red tanks. Since, in general, many hexagons contain no information, the second method uses less memory space and requires less computing time than the first.

The shape of any active or passive object is expressed geometrically as being either a convex closed polygon, an open polygon or a circle of variable radius. All vertices and centers of circles are grid points. Thus a bridge may be represented by a point or by a line segment depending on its length relative to the map scale used. One or more closed convex polygons may indicate a mine field. The computer has to scan only a small portion of its "memory" to review all the information available to it on mine fields or any other type of active or passive objects.

NORMALLY there are two kinds of passive objects in the combat

area—woods, mountains, towns, and the like which may impair vision; and lakes, rivers, mountains which may present obstacles to motion. The mathematical model provides for the designation of eight different probabilities indicating the degree to which each passive object impairs vision or restricts motion.

If an object, like a mountain ridge, falls into both classes, it is stored twice in two different memory locations, with the possibility of having two different probabilities associated with it. One serves to determine visibility through the object and the other an indication of the degree to which the passive object hampers motion across it.

The probabilities themselves may be changed as a result of current events (destruction of a bridge) or decisions by a commander (mine-field no longer an obstacle to motion). In the case of convex closed polygons representing objects such as woods, the probability of seeing through them may be computed as a function of the length of the line segment common to both the polygon and the line of sight.

ACTIVE objects carry with them the coordinates of another grid point—its limited objective. Each active object is regarded as trying at all times to move towards its limited objective. A change of tactical plans thus amounts to a change of the coordinates of each limited objective. Additional space is therefore left in the memory for each object to carry such special information as the amount of ammunition or fuel left, present state of the object (dead, disabled, no longer serviceable) and the like.

Each one of these factors may cause the object to disregard the orders of its commander and to take individual action. As an example, a tank with a low supply of ammunition may decide to move towards the nearest shelter instead of continuing to attack the enemy according to the tactical plan of the group commander. In other words, a change in the limited objective results.

Many decisions on the battlefield are based, among other factors, on the enemy concentration of certain objects in a given area. The computation of the smallest closed convex polygon or circle includes all objects of a given type. This permits the use of concentration or density as a factor affecting tactical decisions (stepped up artillery fire, attack by guided missiles, the dropping of tactical A-bombs).

THE ACTUAL engagement can be divided into three recurring phases—selecting an opponent, one moment of battle, and motion in the combat area.

Opponents may be selected according to different doctrine. Tanks may choose the closest visible opponent. Artillery may fire at the heaviest concentration within its range. A defender may hold his fire until the opponent opens fire first. It should be kept in mind that the choice of the closest visible opponent by the Monte Carlo method means that there may be even closer opponents which could be seen but which are not seen at that particular moment due to psychological conditions on the battlefield.

One moment of battle consists of an evaluation of who fires at whom

and with what results. Probabilities of hit and kill are involved in this phase as well as lethal areas of artillery shells and other warheads.

The last phase—motion in the combat area—is broken down into three parts: reevaluation of tactical plans, motion in the large, and motion in the small. After each moment the commander may change his plans depending on the success or failure of enemy action during that moment. In addition to the factors mentioned, such considerations as own losses, estimated enemy strength, and estimated enemy losses may bring about a change in tactical plans resulting in a change of the limited objective.

EACH moveable object normally advances towards its limited objective by a given number of steps, each step being the distance between centers of adjacent hexagons.

However, there may be insurmountable obstacles between the object and its limited objective. The model provides for a choice of direction of "motion in the large" which will bypass all insurmountable obstacles. The "motion in the small" consists then of a step or several steps forward to the adjacent hexagon whose center lies closest to its direction of motion in the large. Preference of tanks for roads, and the like, can be incorporated into the model at very moderate cost in additional computations. After movements in the combat area end, the first phase of the next moment starts.

HOW reliable will the answers be? Can decisions which involve millions of dollars be based on some numbers which have been pro-

duced by a "black box" called a high-speed electronic computer?

The answer is that no high-speed electronic computer can replace the intuitive thinking of the human mind whether it be called an "electronic brain" or not. In other words, the results coming out of the machine are no more reliable than the data being fed into it and the mathematical model used as a basis for its computations.

This means that, more than ever, human intelligence is required in setting up a battle simulation problem. The only difference now lies in the fact that the tedious work of carrying out well-defined routine computations need no longer be done by hand but can be carried out speedily by a high-speed electronic computer.

Furthermore, the answers cannot be expressed in simplified form—that if the commander does so-and-so, he will always win an engagement. Rather, they state that if he carries out his mission under specified conditions using such-and-such a tactical plan, the odds in favor of his winning the engagement will be five to three. This means that if many engagements of this kind took place, approximately five out of eight times he would win.

MANY factors involving the human element on the battlefield are still difficult to estimate. Suppose a tank on the battlefield is pierced by a shaped charge round which does no appreciable damage except punch two holes in its armor. Will the tank crew keep on fighting as vigorously as before? Will it become so unnerved that its efficiency is impaired? Or will it abandon the tank and contribute nothing fur-

ther to the outcome of the engagement?

If the lead tank in a tank platoon is destroyed by a land mine, will the remaining tanks proceed as calmly as before, or will it take the tank crews twice as long to fire the first round once they have seen the enemy? Factors of this kind are extremely difficult to evaluate and pertinent factual information is usually not too well known.

Paradoxically enough, it is this area of uncertainty which makes the playing of war games advantageous. By keeping all other factors constant and changing a single one, we can determine its effect on the odds for the outcome.

WITH modern weapons becoming more and more scientific it often is difficult to decide which one of two weapon systems should be developed further and eventually put into production. As an example, should our tanks be equipped with one heavy gun, with several recoilless rifles, or with rockets or small guided missiles, to give them the best odds in an engagement with a potential enemy? Some of the answers may be found by playing a number of war games on a high-speed digital computer using various alternatives to discover which one will produce the highest odds in our favor.

High speed computers not only can help determine what to do under certain conditions on the battlefield, but they can also prevent staff planners from making costly mistakes, such as developing end items which look good on the surface but are of questionable value when they are used together with other weapons and men as a team.

# Infantry Trophy

## Match Revived

**T**HE INFANTRY Trophy Match, last fired in 1940, will be included in the National Matches to be held at Camp Perry, Ohio, 20 August to 10 September.

Since the Infantry Match was first initiated in 1922 to provide squad competition in fire and movement utilizing Infantry weapons of that time, changes in ranges, safety requirements and equipment have necessitated a revision of the rules.

The current match, designed to emphasize accuracy and distribution of fire on a group of targets, may be entered by all teams authorized to participate in the National Trophy rifle matches.

Among the major changes in the match conditions: The M-1 rifle will be fired by all team members. Teams will consist of 6 firing members (armed with the M-1 rifle) and a nonfiring team coach and captain. Targets will be "E" and "F" silhouettes rather than the "D" targets formerly used. Targets at 300, 400, and 600 yards will be "E" type silhouette targets, while targets for 200 yards will be the "F" type.

**EACH TEAM** will fire at 8 targets, exposed for 60 seconds, at each



THE INFANTRY TROPHY

range. Forty rounds of ammunition will be furnished each team member at each range. Firing at 200 yards will be in the offhand position; 600 yards, prone; 300 and 400 yards, sitting or kneeling.

Each hit on "E" and "F" targets will count one point. As a bonus for distribution, the square of the number of targets containing ten or more hits each will be added to the total score made at each range.

To penalize poor distribution, the total number of hits on each target, if less than ten hits, will be subtracted from ten, and the total of all such differences will be deducted from the aggregate of the score at that range. No adjustments will be made for misfires, disabled piece or other failure of materiel or personnel. The team having the highest total score will be the winner.



Awards in this match will be as determined by the National Board for the Promotion of Rifle Practice, Department of the Army (see AR 920-30). The 21-inch "Infantry Trophy", designed by E. M. Viquesney and purchased by private subscription among Infantry officers and men of the Regular Army, National Guard and Reserve, was presented to the National Rifle Association of America in 1923 by the United States Infantry. Beginning in 1936, the Infantry Trophy Match was incorporated as a part of the National Trophy Matches and the trophy was placed in the custody of the National Board for the Promotion of Rifle Practice to be competed for and awarded to the winning team in this event.

BETWEEN 1922 and 1931, the Trophy was won by the U. S. Infantry twice; U. S. Cavalry once; various state National Guard teams four times; and State civilian teams twice.

There was no competition for the trophy in 1926 nor from 1932 through 1935. Between 1936 and 1940 the trophy was won by the U. S. Marines, 1936; U. S. Cavalry, 1937; California National Guard, 1938; Washington National Guard, 1939; and the U. S. Coast Guard, 1940.

This year it will again be at stake in the National Trophy Matches in which the finest military, police and civilian teams "shoot it out" shoulder to shoulder on the ranges at Camp Perry, Ohio.

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### **Marksmanship Encouraged**

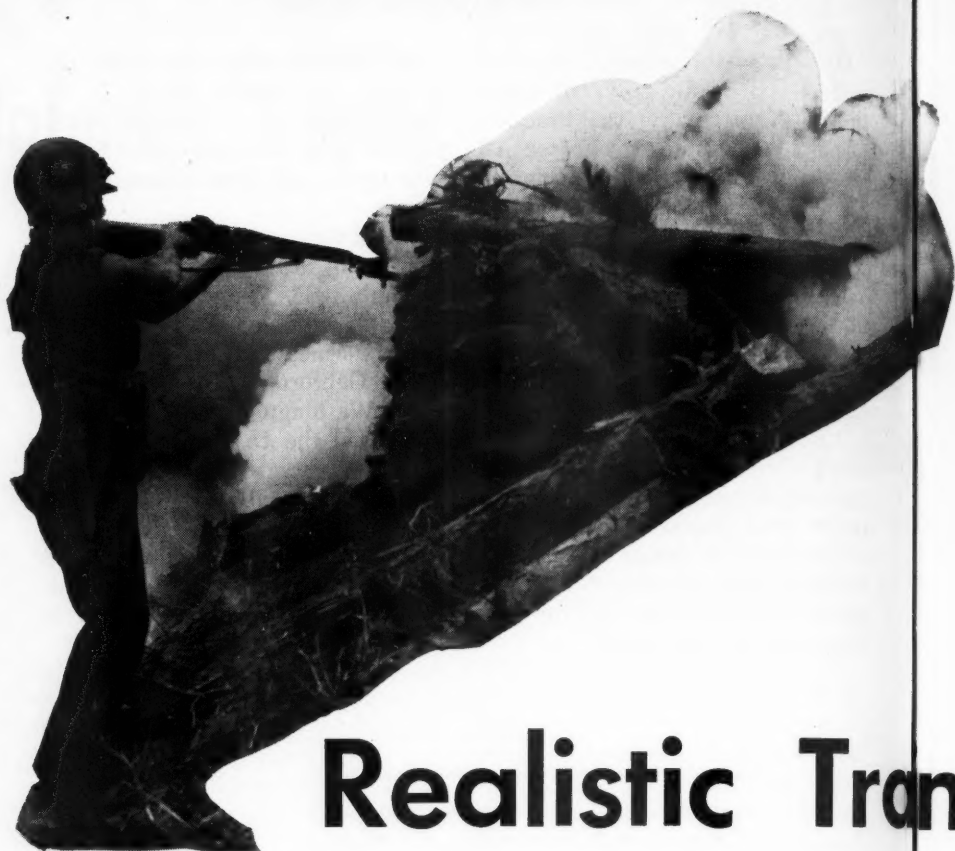
A NEW, distinctively different Excellence-in-Competition Badge will be awarded to civilian citizens of the United States for outstanding achievement in service rifle or pistol marksmanship this year. The Army's badge, which has in the past been awarded to civilians, will now be awarded only to Army personnel.

The new Excellence-in-Competition badge will be awarded by the Army through the National Board for the Promotion of Rifle Practice in recognition of achievement by an individual, attained in either NBPRP-approved matches which are included in the program of National Rifle Association Regional Championships, or in individual matches of major Army

Command competitions. The new badge will not be awarded in the National Matches as it would duplicate certain medals awarded in these matches each year. The new badge will be awarded only to participants in authorized competitions on or after 1 January 1955.

**CIVILIAN MARKSMANSHIP.** AR 920-20 prescribes methods for implementing the program fostered by the National Board for the Promotion of Rifle Practice for promoting marksmanship training among able-bodied citizens outside of the Armed Forces. These regulations do not apply to ROTC units.

***Lives are saved and victories won by***



## Realistic Train

*During mock battle action in Korea, a rifleman "covers" a bunker into which he has hurled a phosphorous grenade.*

LIEUTENANT COLONEL ROBERT B. RIGG, *Armor*, author of "Red China's Fighting Hordes" and other works on military subjects, is on duty in the General Staff. This article, based on a chapter from "Realistic Combat Training and How to Conduct It," copyright 1955 by Military Service Publishing Company, Harrisburg, Pennsylvania, may not be reprinted, as a whole or in part, without permission of the publishers. The opinions expressed are those of the author and do not necessarily represent official views of the Department of Defense, Department of the Army, or any of its agencies.

**I**N THE SPAN of years since 1776 much has been done in military training to prepare, and in a degree introduce, our soldiers to combat. Over the years our training has progressed from the "parade-ground-into-battle" stage, to the "exposure-to-fire-enter-combat" period.

American military minds have shown imagination in the steady development of realistic mediums to train and test men: the infiltration, close combat, combat-in-cities courses, overhead artillery fire, tank duels with live .30 caliber ammunition, and lastly the exposure of troops to the blasts of atomic weapons.

However, the best of today's training must meet the demands of tomorrow's worst battlefield—the atomic. This means that our minds must, more than ever before, prepare men for the shock of war by an imaginative and realistic approach to training.

THIS preparation cannot be passive. It must be positive. It must in moments be brutal in its intensity, its pressure and power, so that the soldier may emerge confident, even though shaken in the momentary process of the training ground. He must have a feeling that while the vise closed upon him, he demonstrated with his own power the ability to slip out or to break its hold and emerge the master of the

bow. When the firepower of massed arrows proved itself in combat to be dominant over the long, formidable lances of the knights, there were many knights who could not be convinced that the successful age of their arm was passing.

So they carried on with lance and shield until gunpowder spelled their doom. But in each instance the knights trained hard and earnestly. They flexed their muscles more than the bowmen and later musketeers. However, the knights were training for the wrong thing, even though their training developed prowess and rugged fighting ability.

So it is that we must be sure that we are training for the correct thing in the age of our existence.

# Training for Combat

machine forged against him.

It is to this end that we must apply ourselves, and to accomplish this end we must use more original means. We must in the future match the potentiality of atomic weapons with more modernized training that at its beginning may seem to some to be unconventional.

It is a simple requirement of modernization to keep pace with the weapons at hand within the times. In ages past certain men believed in their shields and plate armor while within the particular age certain others placed their faith in new tactics and technique for the use of the arrow and long

**Lt. Col. Robert B. Rigg**

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\* \* \*

A TRUCK is coming toward your column. You recognize it mainly because on its front end there hangs the label of EXPLOSIVES. This is a routine sight. Such trucks make their "milk runs" to ranges all day long. But this one is different because it is on fire! Furthermore, it stops alongside your column:

What to do department? How many fire extinguishers come forth

out of your trucks? How many men do anything? How many are alert to the danger or find out its cause?

This little "incident" can keep routine training from being dull while at the same time, it can teach lessons.

There are many things that can be done to project problems into reality.

If you want to get some emotion and action into the assault phase of the infantry company exercise, just try using low trip wires and men will spill, helmets will clatter, and rifles will crash against the earth. At night you can really produce havoc and casualties within a dismounted attacking force by these wires. A man never knows when he'll be the next to tumble, and when he does fall, it will be hard!

Scenery and setting are part of reality. But you must make something *personal* happen to men. Surprise them, shock them, and shake them out of complacency. Stir their emotions, and "twist the bayonet," so to speak. Specifically, get some snarl into troops. Don't let prisoners have it easy. Make it rough on them.

Toss in some unusual (but logical) situations. For example, a driver-training road march need not be all dull driving. It can be arranged so that a truck actually begins to pour out billows of smoke after hitting a mine. See what leadership emerges out of this situation.

Learn how to "set a tank on fire" when it is "hit" and you'll have a crew that not only experiences realism but learns to execute rapid evacuation! Get out and embarrass

a maneuver enemy bivouac at night by actually disabling (but not damaging) vehicles.

These are features of projecting problems with realism.

PERHAPS the reality is momentary, but the surprise is important because you are making men *react suddenly*. Furthermore, you are keeping their senses alert and their minds *tactically suspicious*.

If they know "the old man" always has something up his sleeve, then you will develop *interest*.

Parachute troop action is real projection of reality. So is the landing of troops by helicopter or amphibious craft. Paratroopers and vertical envelopment are ever-present tactical possibilities which ground troops of all arms must be prepared to meet. Sometimes in training you may have to simulate these.

SUPPOSE you want to insert some paratroop action into a small exercise and yet it is not practical or possible to have an actual air drop. Enemy paratroopers have supposedly dropped in the region. Your unit's job is to attack and round up the parachutists. This is a normal mission for reserve troops in rear areas.

To convey realism it is necessary to stimulate the imagination by a few props. In the aggressor drop zone (DZ), unfurl some parachutes and drape a few on bushes or hang a few from trees and scatter some on the ground. Thus you set the problem in motion by a little scenery.

Your aggressor paratroopers may be nearby or distant, but your friendly troops should meet the DZ

early in their reconnaissance. It takes only a truck and a few men to set up these props. Too often we mix and bake our tactical cake without putting any frosting on it. You can do it any way you prefer, but it helps to liven your training with a few surprises, and frosting.

It is even interesting and profitable periodically to see how long one machinegun or one rifleman can hold up a squad, platoon, or company. There is always a lesson to be taught here. Time your unit from when it first stops at this "resistance" until it overcomes it. It won't hurt to leave one "enemy" paratrooper in your fake DZ area to harass your reconnaissance element. Be sure he has ample blank ammo, cover, and can scurry around rapidly. Then press your own subordinates for an estimate of aggressor strength. You may be surprised at reports. Too often they are exaggerated!

Where you do not or cannot establish an elaborate battlefield setting, you can always use the "periodic exhibit" or "surprising situation" technique. It gives a little change of pace and keeps your unit alert and interested.

A ROAD BLOCK is an example. You know that a unit is to pass a certain point in the exercise so you put up a road block, but you dress it up a bit. Run a vehicle into a ditch near this block and let the driver rest a couple of hours as a wounded casualty. He can light a smoke pot upon the approach of troops or you can build a smoke fire near the vehicle so as to denote a bit of ruin. This is a vignette. It is simple to establish, but it puts a little variety along the route. There

are other "surprising situations" you can develop. Don't be timid about using some "after action" ones that record the failure of some earlier group or effort.

If your trucks are not in use, scatter a few of them about in "wrecked" situations, and you can always add to the situation by having the drivers request (and receive) assistance from your unit. Get a mess truck (conveniently loaded with coffee) mired down some place in the area and you won't have to direct assistance to it.

NO MATTER what your exercise is, arrange for some gismos or gimmicks—some sudden situations of unexpected nature. These will be preplanned props and to accomplish them, draw on a headquarters or other unit not actively engaged in the exercise. If your aggressor force is large enough, then it can help out. Remember, however, that many combat situations involve your own elements which are in trouble.

You don't have to get a company in trouble but you can logically place vehicles and a few men in predicaments designed to—

- Divert from the unit's mission.
- Disturb the unit in accomplishment of its mission.
- Add a note of realism.
- Arouse interest in the exercise.
- Delay the unit timetable.
- Disrupt the order of things.

The purpose of the situation or prop setting must be determined and noted so that *constructive* criticism and comment will result in the critique.

Secrecy is very important to any





*During a Platoon in Defense problem, realistic live action is provided by hand-to-hand close combat.*

exercise insofar as surprises are concerned. You may not be specifically testing men and units but you are certainly training them to react properly to the unexpected.

When your unit can snarl and bite in front and whip its tail into swift action, then you have achieved something great.

#### **TAKING PRISONERS**

**TAKE PRISONERS**, and make prisoners wish they were not! PW status must be made unpopular. If it is known before an exercise that all prisoners captured by the aggressor force will be foot marched 25 miles—then men will fight on a maneuver to avoid capture. This is what we want.

March your PWs and march them long and fast. If your PWs are physically fit they will take it; if they are not they will suffer accordingly and their commander should later be informed. March-

ing is training. Training is not to be used as punishment. However, it is important to move PWs back from the front.

Don't believe that old soldier cliché, "In real combat I'd have shot him before he captured me!" If the soldier is captured, he is a PW, until he is released or escapes. As a PW don't let him have an easy time. Keep him on his feet as much as you can. The prisoner made to take off his shoes and walk "home" isn't going to get captured again if he can help it. He learns a lesson.

Make capture an unpleasant experience, but do not degrade a soldier. Just march his feet off. Taking shoes off is a control measure to prevent escape (if your guard detail is small). Or you may use it as a device to keep a captured man within a certain radius or area (and prevent him from being a useful spy) if you have to move on.

I CAN recall many instances where guns had to be knocked out of careless sentry hands and other weapons, like machine guns, grabbed and upset by raiders who were stealthy enough to get close and prevail. Once "capturing" a three-man outpost in darkness at Fort Knox, I had four men (whom I had not seen) jump squarely on top of me. It was a good lesson for all concerned.

The men were a little embarrassed at having mauled their battalion commander by landing on top of him, but I quickly commended them for their aggressiveness. Later, I kicked the gun out of the hands of a careless private and escaped. Colonel or private, we all have to rest on our own physical ability in a pinch.

More than ever in our military history is it essential to teach—

DON'T SURRENDER!  
DON'T GET CAPTURED!  
DO ESCAPE!

Outnumbered as we are by the ground armies of Communist nations, our military manpower is even more valuable and must have even better quality to compensate for the odds which we may face.

The best order of the day that you can put out to a platoon or regiment before any maneuver—or combat itself—is something like this:

Avoid capture, but if taken your duty is to escape.

#### **AGGRESSORS MUST BE BITTER MEN**

IF YOU become an Aggressor commander you'd better look up the word and get tough! If you

do your job correctly you'll work twice as hard as your opponent, but you'll take satisfaction in embarrassing your "enemy."

Take the job seriously; not lightly. Get a snarl into your men and your work; play it rough and deal tough, because in most instances you will not have all the strength you require and your job is that much tougher. You should try to make one platoon count for two, and if you have any professional skill and the correct attitude you can do it.

If you are timid, the opposing forces will catch on. Conversely, if you are bold, you will thrust your will upon the other side and keep it reacting to your actions. In short, take the initiative and hang onto it.

You must think fast and act with rapidity. While the opposing force is reacting to your first move you should be generating your second and third and thinking of your fourth.

Aggressors must penetrate and wreak havoc well inside the front lines of a maneuver. They must use every ruse possible to disturb the mental confidence of their opponents and to militarily "destroy" key installations.

THE field manuals speak of speed, rapidity, flexibility, and the like. These are not idle words. In a classroom we nod and acknowledge belief in these and vow to apply them. But try these things out as an aggressor. Vow before the tactical altar that on the first day you are going to try and *demonstrate one thing*.

Choose *speed*, for example, and then concentrate your command on the application of it. Next day choose *flexibility* and see how much

you can confuse your opponent by compounding the composition of your force, switching elements and altering proportions. In such measures as these you are training not only your own force but the other side as well.

The Aggressor commander and the Aggressor soldier—each has imposed upon him the training mission and necessity of being bitter, nasty, unorthodox, daring, and ruthless. The “enemy” on maneuver cannot be too unusual, or too rough.

### CREATING CONFUSION AND CASUALTIES

THE NIGHT is not for rest. For the aggressive, darkness is a shield and armor; for the timid, the lazy, and the uncautious, it is quicksand. There is no finer training hour or period for the development of individual and small unit spirit and confidence.

Night is the time to teach men to capitalize on enemy areas, just behind or deep into hostile lines. This is the age of helicopter patrols, the twilight-launched and landed men who can make the safest rear area unsafe.

Soldier confidence is built when you give him practice in overcoming the uncertainties of darkness. Make sure your men, whatever the type unit, learn to *operate* in darkness, not just stand or wallow around.

DARKNESS creates realism. It manufactures the scenery and atmosphere of war because it transforms minor obstacles into major ones and throws a cloak of mystery about landscape and terrain that is so ordinary in daylight.

Men are pitched to higher emo-

tional degrees at night—if awake! For some the senses become more alert, but as the hours wear by with inaction, darkness can act like a drug to the human.

It is a time for creating confusion.

It is a good idea to take a new slant on a headquarters company and make solid soldiers out of the cooks, clerks, typists, and mechanics who miss so much of the day-to-day combat training. Never neglect to capitalize on volunteers and volunteer spirit. Generate it and “decorate” it with written commendations when it is good.

ON MANEUVERS you may not *get credit* for winning, but you should certainly try like the devil to embarrass your opponent. The sicker you can make him look, the better. The more you can show up his weaknesses and display your strength, the better! And give some written commendations to your men who do well tactically. If you write one commendation for an administrative job well done, then you should reserve your next three for tactical actions exceptionally performed.

Put a price on the heads of opposing officers during small unit exercises. Announce your rewards ahead of time: “a three day pass for the men who can capture a company or battalion commander.” Or scale it to “a commissioned officer.” Don’t wait for a full maneuver to do this. Do it regularly and you’ll find not only men trying harder, but men being regularly rewarded.

The best time to do this is during night exercises. This will keep officers on their toes; they should



*On this Tank Leader's Reaction Test Course, combat atmosphere is provided by shot-up buildings and debris of "previous action."*

not retire backwards, but should be even more daring so as to demonstrate leadership.

PUT YOUR UNIT into a maneuver *to win*. Night raids and patrols may not gain ground but they are vital to training your men in aggressiveness. Here is your chance to show up an opposing unit and if you can penetrate the enemy area you should "raise hell" in it.

You may not be able to notch your guns for your kills, but you can smear enemy tanks with paint symbolizing the fact you could have set them afire with "Molotov cocktails"! Shoe polish or saddle soap cans filled with thick yellow paint and a cloth or sponge compressed in it is very suitable for this destructive marking. Supply your raiders and patrols with plenty of these. Small bottles filled with paint are better if you want to throw them. In either case you

will force the vehicle driver or crew to scrape off your "art work." Theoretically, you have eliminated some vehicles which will not show up on tomorrow's battlefield.

You should not *damage* equipment, but you can mess it up and toss it around. Short of damaging equipment, patrols should "mess up" areas they penetrate. You can teach fine lessons to the careless by these tricks—

- Look in vehicles for loose weapons and steal them. Embarrass the soldier who is not actually gripping or sleeping on his weapon.
- Reach in under the flaps of tents and you can snag a pistol or carbine.
- Remove distributor caps, disconnect vehicle wiring, or let air out of tires, but do *not* put sugar in gas tanks.
- Twist CP signs around or rip them up and toss them in a ditch.
- Flag down convoys with a flashlight and take at least the lead driver prisoner; or "order" him to turn on

his lights "for safety on this road," then let him travel on.

- Disarm and capture sentries. Take off their boots and hide them. Then you can hurriedly abandon this casualty but watch out for the alarm he spreads.
- Pretend to be searching for raiders (your own patrol) after the last situation, or if challenged.
- Bluff your way and get in close to your challenger if the situation is tight.
- Get to a CP tent if you can, go in through a side; grab overlays and the senior officer if you are a group. If alone, then grab any handy documents—and git!
- Unleash smoke pots in a bivouac or CP area, and then try to get into the CP to rip off an overlay or steal documents. This is the best CP raiding technique.
- Yell "Gas" several times, masking yourself and persuade everyone else to mask. Then work your way around to where you can capture something or raise more havoc.

### HOW TO "SET TANKS ON FIRE"

THERE ARE several ways to give a tank the symbolism of being "knocked out" without actually setting it afire.

First, if you are an umpire you should carry ample smoke pots and smoke grenades. The former are recommended for realistic effect purposes; the latter will do if you must lower your sights for purposes of practicality, availability, or economy.

When you select a tank that is properly a casualty, ride up to it, signal it to halt, and say no more providing your white umpire identification is known and recognized. Then roll a lighted smoke pot slightly (about 3 feet) underneath

the tank. If it is a grenade, toss it well under the tank. Then as the smoke curls up and entwines the tank you and the "enemy" will see the tank crew *jump* out of the tank and not just crawl.

For all mobile, tank-versus-tank exercises, it is recommended that every tank at least have a smoke grenade tied to it so that by umpire (radio or on the spot) direction, the tank can quickly symbolize its out-of-action status. You will get much more realism and crew interest out of your exercise if you do this consistently.

### MAKING MARCHES REALISTIC

THE requirement of the day is to foot it 15 miles. Don't let such marches just be marches. Get at least one surprise into each one, and that should be a combat surprise, not a special service project! You know your route, so at some logical place in the last portion of it, you can inject a surprise.

Here are some minor ideas:

**A ruined bridge.** Set your TNT detonators at the far side so as to catch the column when it is on the bridge. Your TNT charges can be placed in the water. You can create royal confusion, but demand action from those not designated as casualties.

**A mine field.** Booby trap this. Set your unit to removing the mines. Some Aggressors nearby should take your unit under fire. Demand action. Demand estimates on Aggressor strength; demand speed in this. Check the accuracy of reporting.

**Aggressor infantry action.** It is well to introduce this anytime. Dis-mounted Aggressors made to march the route should carry smoke gre-



nades and pots. Give the Aggressors free hand to raise havoc and conduct ambushes.

**Armored action.** A section or platoon of tanks may be available and can be persuaded to give an hour of their time. If at all possible blank ammo should be fired in the main gun. If armor is not available, use a few personnel carriers or mock up jeeps. Have them hit the column from behind and later range to flanks and front.

**Aircraft action.** L19 aircraft jet planes can be scheduled to "hit" the column in several sweeps. Check your route for obstacles which the pilot should know about, however. Don't allow flying below prescribed altitudes for strikes.

**Booby traps.** Put a case of coke or beer beside the road; booby trap it to set off a charge some yards away. Other items like flashlights, fountain pens, weapons, can be similarly arranged.

Motor marches can be enlivened by these actions also. You can build up or limit the play to suit your convenience and needs. Truck convoy drivers must be trained and alerted to guerrilla ambushes and how to get out of them. The first four of the following situations are common to guerrilla actions and can be set up along convoy routes:

**Lead vehicle strikes a mine.** Remaining drivers stop and when they get out the guerrillas open fire. Train your convoys to have an SOP to meet this circumstance.

**Mines along de-mined routes.** Mines on shoulders of roads to catch drivers who swing wide and

do not follow in place when the area is known to have some remaining mines.

**Blown bridges.** You probably will not be able to blow any bridges, but you can put markers on them and by the use of TNT and smoke pots cause an explosion alongside the bridge as the convoy first sees it. Try to cause your convoy to use a ford or take another route. A surprise like this should frequently be used.

**Barricades.** Roll some big oil barrels into the road. Scatter some empty gas drums. Booby trap these to explode some minor charges.

**Burning ammunition truck.** Here is an effect that men will remember—an ammo truck on fire, careening down the road and cracking with explosions. Use regular ammo truck signs on your vehicle. Load up with empty ammo boxes which you stack, brace, and nail so as to give the truck a loaded appearance. Anchor a smoke pot to a box of wet sand inside the truck bed. Light the smoke pot and drive off, hoping you don't have a tail wind. The gas masked assistant driver earns his pay by lighting M8 firecrackers and tossing them *inside* the truck bed.

These are some of the things that can be done to make marches realistic. However, the most realistic thing you can do is to have your troops go into tactical action at the end of a march. Plan your schedule so that even on a long march you climax it in a firefight. The conflict doesn't have to be long; it just has to be there.

*Atomic aspects of realistic training will be covered in a second installment of this article in the September ARMY INFORMATION DIGEST.*



*Techniques of an actual operation are observed as an appendix is removed from a dummy at the Medical Leaders School*

## Medical Leaders School

**R**EGULARLY once a month Oscar has his appendix removed.

That may sound a bit hard on him—even impossible—except that Oscar is a dummy used for demonstration purposes at the 5th Infantry Division Medical Leaders School—first of its kind in USAREUR—located at Munich, Germany.

Since it was started the School has sent more than 200 men back to their own units better qualified to render medical support. Apportioned over a period of six weeks, each school cycle covers 254 hours of subject matter, ranging from basic medical subjects to advanced preventive medicine.

The various courses are taught by enlisted technicians possessing highly developed medical skills. Most of the training aids have been devised by the instructors. The school also uses a library of some fifty films. Highlight of the course is the two-hour operation performed on Oscar, with technicians

acting the role of “surgeons” to demonstrate techniques.

Senior officers of several NATO armies have visited the school and have taken back with them copies of the lesson plans and training aids for use in their own medical schools.

*Realistic training aids help students understand intricacies of the human anatomy.*



# A Pattern for Logistical Support

Major Edwin S. Marsh

**A**SILENT WAR, far from the actual crack of rifles and roar of artillery, was waged at Fort Lee, Virginia, early in May in one of the largest tests of logistical support in Army history.

More than five thousand persons—student officers, technical and administrative school umpires and support personnel—gathered for the six-day hypothetical battle called Logex-55.

An imaginary invasion of Southern France was planned to lend realism to the affair. But the real test was the one with which the student officers had to cope—how to keep a field army of 400,000 men fighting under all the pressures of modern war.

Atom explosions, guided missiles, sneak guerrilla attacks and a powerful enemy were among the roadblocks thrown in the way of the students. Umpires, both above and below the future staff officers in the chain of command, controlled and directed the maneuver.

Logex has been held annually

*MAJOR EDWIN S. MARSH, Medical Service Corps, Public Information Officer at Brooke Army Medical Center, Texas, was PIO for Logex-55.*

since 1948 to test students and to emphasize inter-service cooperation. This year for the first time, the maneuver in addition to training personnel was used to test proposed new concepts developed by the First Logistical Command under Brigadier General F. A. Bixby at Fort Bragg, North Carolina.

RECENT striking changes in warfare, it is believed, require far-reaching changes in the science of supporting combat troops. The development of atomic weapons, for example, puts imperative urgency on dispersion of supply depots and rear area troop concentrations. Old methods of handling supplies and replacements may no longer suffice. Even the most efficient combat weapon is useless unless the support for it is available in the right place at the right time.

Extensive studies on logistical problems have been carried out by the Army since World War II. Logex-55 represents the largest test to date of concepts designed to speed up logistical operations by simplifying, decentralizing and clarifying command.

Under this plan effectiveness of



*Many Army schools, including the Chemical Corps School shown here, conducted premaneuver sessions for students taking part in Logex-55.*

logistics is to be increased by eliminating intermediate installations through the optimum use of modern transportation.

Emphasis is placed on the primary mission—support of combat forces. Combat commanders are relieved of many administrative and logistical functions.

Theater Army Headquarters, the ranking Army element in a theater of operations, was organized with the conventional general staff and served as a supervising, planning and coordinating agency. Under Theater Army came the field armies (or army groups) and a Theater Support Command, functioning as parallel commands.

Theater Army would delegate all logistical planning and operations to the Theater Support Command, which in turn would contain the senior representatives of all technical and administrative services.

Organization within field army is similar. The commander delegates details of logistical activities to his army support commander.

UNDER the concept, rear bound-

aries are established as far forward as battle conditions permit. The theater support commander (replacing the old Communications Zone commander) extends operations as far into the combat zone as possible and conducts all administrative operations in rear areas—that is, all except those which must be under the combat zone commander. This point of division occurs where distribution to actual combat units takes place.

Under this concept, responsibility for area control does not necessarily restrict the operations of the combat zone commander or support area commander in the area of the other.

Among its principal features, the concept calls for dispersion of units, supplies and facilities to the point where they are no longer profitable targets, but are so deployed that the loss of some will not disrupt the entire scheme of combat operations. To meet modern methods of attack, the concept proposes maximum authority for local commanders.

The Theater Support Command is organized into one or more

coastal support sections (formerly base sections) and one or more direct support (formerly advance) sections. The old-style intermediate section is eliminated, and its area occupied only for routes of communication. Installations are dispersed along the coast and directly in the rear of the field army.

THE CONCEPT proposes stripping field army of all depots, evacuation hospitals and heavy maintenance. It also maintains that neither field army nor the direct support section should perform any functions which prevent them from keeping up with tactical operations.

When practicable, supply deliveries are made directly from the coastal support section to field army supply points or even to division issue points.

Support sections and the army support command have primary and secondary missions. The primary mission, termed "wholesale," is that of providing support for combat forces and for original distribution of supplies to the support elements themselves.

The secondary "retail" mission is that of providing final distribution of supplies to the command itself. All wholesale functions would be concentrated directly under the support section. Retail, or local support, functions are delegated to a deputy for section service.

WITHIN both coastal and direct support sections, depot complexes composed of branch type depots are established. Depot complexes are dispersed in the vicinity of ports and beaches in the coastal section. In the direct support sections—which are kept as shallow as

possible—depot complexes follow closely behind the field army.

These complexes (along with the local elements designed to support them) are called service centers. Under the proposed concept, groups of wholesale installations are relieved of routine activities connected with their own existence. The service center commander does not command elements of the technical and administrative support commands located in the complex.

The Theater Support Command, all general sections and the army support command are organized along functional staff lines instead of the conventional general staff. This staff is organized into four groups—(1) requirements and acquisition; (2) storage and distribution; (3) movements; and (4) maintenance. All other conventional staff and administrative functions are delegated to the deputy for section service.

Sponsorship of Logex is rotated annually among the technical and administrative services. This year, under direction of Brigadier General James P. Cooney, the Army Medical Service was responsible for conduct of the maneuver. In addition to a staff composed of personnel from the Medical Service, each technical and administrative school, as well as the First and Second Logistical Commands, the Navy, Air Force and Department of State sent representatives to concentrate on appropriate aspects of the exercise.

During the play of the exercise, for example, the Air Force developed situations involving counter-air, interdiction and close air support, air defense, reconnaissance, and cargo and medical airlift oper-





*This gigantic floor map enabled Transportation officers to keep a constant check on movement of trains, trucks and convoys in the battle area.*

ations. The chief of the maneuver plans division was responsible for adaptation of new concepts to the maneuver play.

LOGEX did not employ units in the field, though a detailed battle scenario provided realistic situations. The tactical situation involved an invasion of Southern France and an advance to the north to link up with Allied forces driving east. The imaginary beach assault

on the shores of Southern France had begun 62 days earlier.

Southern France was selected because of the vast quantity of available World War II data stemming from 1944 when General Patch and the Seventh Army fought through that sector. At that time the Army collected a wealth of material including road and rail information, terrain, weather and climate data and statistics relating to the economy and population of

the area. Use of this material for maneuver purposes represents a considerable economy of effort.

The student player, in the capacity of a staff officer at one of the major headquarters or of a large service unit, took part in operations required to support a field army of 400,000 troops. The maneuver opponent possessed greater manpower potential than the Allies and equaled them in air and ground weapons. He had the capability of defeating the Allies and could be overcome only by superior leadership and professional competence.

ONE of the unique features of the maneuver is the method used to simulate field reconnaissance or trips to a higher headquarters for factual and strategic data. Buildings are set aside for this purpose.

The Information Building is a vast storehouse of all the facts that would be available in a higher headquarters. Here are road maps, climatic maps, terrain maps, plastic model maps, charts and statistics relating to the population of the

area, the agricultural economy, facts about the history, culture and habits of the populace.

The Reconnaissance Building, on the other hand, contains facts available in battle only after a scouting or reconnaissance patrol. If, for example, the maneuver scenario reports destruction of a major bridge, the student officer can go to this building to obtain any information for rerouting traffic or rebuilding the bridge. Although he may be just across the street from the Reconnaissance Building, he must wait the actual time it would have taken him to travel to that particular spot in combat before proceeding to the next step.

Logex is the responsibility of the Continental Army Command at Fort Monroe, Virginia. Plans for this year's exercise were started in July 1954 at Fort Sam Houston, Texas, under direction of General Cooney. Major General Andrew T. McNamara, from the Office of the Deputy Chief of Staff for Logistics, Department of the Army, was Chief Umpire.

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### *Arctic Underground*

The possibility of "arctic subways"—tunnels under the ice and snow of the Greenland ice cap to facilitate movement of materials, equipment and troops—will be studied by Army Engineer expeditions this summer. The experiment is being carried out by Army Engineer scientists with cooperation and permission of the Danish Government. Using special snow-plowing equipment, a trench 25 feet deep and 12 feet wide will be cut into the snow, then covered with snow blocks. Directing the experiment will be Dr. Henri Bader, Chief Scientist of the Army Engineer's Snow, Ice and Permafrost Research Establishment.

# New Home for Electronic Wizards

George J. Eltz

**D**URING the past one-third century of electronic miracles, it has become increasingly evident that the Nation's future rested upon its ability to continue its technological leadership and application of such developments to national defense. As modern weapons increased in scope, size and complexity, the means for fashioning these advances also had to keep pace.

In the field of Army communications this has taken the form of an ultra-modern, specially designed Signal Corps Engineering Laboratory, newly built in the Camp Wood area of Fort Monmouth, New Jersey, about two miles west of the main post.

Here radar, radio, rockets, guided missiles, heat, sound and light—in all, 22 different fields—are under continuous study. A single purpose dominates all activity—to implement the Army's over-all weapons policy by making possible a smaller

but highly modern, fast-moving defense force using newly developed technical weapons—all aimed toward a decrease in military manpower and defense costs.

WHEN widely scattered units of the Signal Corps Laboratories began to move into the new consolidated structure last September, an entirely new chapter in the electronic era began.

From a humble beginning thirty-seven years ago when a single wooden shack built on former marsh and potato land housed six employees, the Signal Corps Engineering Laboratories has continued to pioneer the newest technical advances and scientific weapons constituting the nerve and control systems of the Nation's fighting forces.

In the months preceding the Pearl Harbor attack, the Laboratory consisted of 211 civilians and 7 officers, occupying some 100,000 square feet of space. The tasks of the Signal Corps at that time were adequately performed by this small group using this modest work area.

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GEORGE J. ELTZ is Director, Engineering Facilities Division, Signal Corps Engineering Laboratory, Fort Monmouth, New Jersey.

When World War II broke, facilities were expanded until, at the peak, personnel had zoomed to 10,000, and the work area correspondingly increased. In the post-war dip, employees numbered fewer than 3,000 but following the Korean flare-up this was increased to over 4,000—the present personnel strength.

These figures alone, however, do not tell the entire story. With the passing years has come a change in the nature of the task. Today's "electronics" encompass a type of laboratory and a field of operations unknown to the past, with horizons promising limitless expansion.

MUCH thought and labor preceded selection of the new laboratory. It was decided that a building accommodating 4,500 employees would generally satisfy present and foreseeable future demands. But translating personnel

needs into square feet of laboratory space was not simple. Final figures called for 750,000 square feet of usable space, but after allowing for operating areas—corridors, stairways, heating plant, equipment rooms—the gross area worked out to a million square feet.

The shape of the new laboratory was not quite so easily determined. Ever present was the question of cost and how to obtain the maximum usable space per dollar. Many laboratories were visited and layouts studied. The figures showed that a six-sided structure offered the greatest possible return for the money invested. The building accordingly was laid out as a hexagon. The sides, however, are not equal in length.

To permit easier financing, the building was planned in three increments, each essentially complete but an integral part of the whole. To date, the first two have been

*This aerial view shows the first two sections already completed. Eventually the Laboratory will be a six-sided structure.*



Signal Corps Engineering Laboratory provides a

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authorized and funded. One is already occupied by units formerly housed in the Squier Signal Laboratory. The second, for employees now in Coles Signal Laboratory west of Red Bank, is scheduled for occupancy in early summer. The third increment, now being considered for authorization and funding will be used for Evans Signal Laboratory, located about twelve miles south of the new structure.

EACH floor in the new laboratory has its own "hung ceiling." A five-foot area between the hung ceiling and the floor above is available for utility and ventilation ducts. Four general services are supplied—60-cycle, single- and 3-phase; 400-cycle, single- and 3-phase; telephone; and intercommunication. In addition compressed air, hot and cold water, drainage, and commercial gas, are distributed laboratory-wide.

In all floors, free use is made of the space between the hung ceiling and the floor above to distribute utilities, heating and ventilating systems, and where applicable, air conditioning systems. In all, the building contains 36 refrigeration systems and 294 ventilation systems of all types.

When completed, the new laboratory will have three elevators serving the 443 offices, 41 shops and 496 laboratories. Special facilities include a cafeteria seating 1,100 and a modern theater accommodating 500 persons.

There are two floor area plans. On the first floor the central 12-foot wide corridor is flanked on either side with work areas about 44 feet wide. On the remaining floors, two corridors divide the area into three rings. The two outside rings—one 17 feet wide, the other 24 feet—are for offices or combination office-laboratory. The central 42-foot windowless ring, for the most part, is laboratory space.

In the central ring, ten complete air changes per hour—adapted to season and outside temperature—flow through the forced air heating and ventilating systems.

Past studies show that a modern laboratory area is almost completely revamped within several years as technical emphases shift. Accordingly, the new laboratory has been designed for maximum structural flexibility.

Because of its "module construction," room lengths throughout the building can be altered in four-foot sections, using partitions of the fire retardant type. Lights, windows, and ventilation systems also are designed accordingly.

The consolidation within a single structure and area of three laboratories and four separate sites making up the Signal Corps Engineering Laboratories will provide, for the first time, a completely integrated organization and laboratory which promises increased efficiency and more effective use of scientific skills. Ultimately all phases of Army communications will benefit.

## Research Trends

SUCCESS in preventing oxygen-induced deterioration of tires, oil hose and other rubber items by use of antioxidant compounds has turned attention to the next major offender—ozone. In areas having a high ozone concentration in the atmosphere, mechanical rubber items have been rendered useless in as little as one week, and tires rendered unserviceable in as little as three months.

In an effort to overcome this harmful effect, the Army Ordnance Corps has launched a program to develop ozone-resistant rubber items, employing rubber-compatible phenylamines as the chemical agent. Experimental contracts have been placed with rubber companies, and fleet testing of tires has been carried out.

Tests to date indicate no loss in mileage or performance will result from use of antioxidants. The cost is small. A large truck tire costing over \$125 can be protected for about 90 cents, compared with \$25 for protecting the same item by application of a plastic sprayed coating. Present goal of Ordnance Corps is to have all military tires procured in 1956 and subsequent years contain such antioxidants.

CONSTRUCTION of a pilot plant for radiation sterilization of food with a capacity of approximately 1,000 tons a month for the Armed Services, is planned in 1958, the Subcommittee on Research and Development of the Joint Congressional Committee on Atomic Energy was told recently. Representatives of the Army reporting to the Committee included Major General K. F. Hertford, Chief of Research and Development, and Major General K. L. Hastings, The Army Quartermaster General.

The peaceful utilization of atomic energy has opened a new horizon to the food industry and associated biological activities, General Hertford told the subcommittee. "The concepts of using radiation to destroy micro-organisms is by no means a new idea," he pointed out. "The intense interest in its commercial application for food sterilization, however, was not really accelerated until the end of World War II. Primary impetus was provided by the availability of radioactive by-products from the Atomic Energy

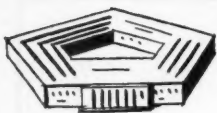
Commission's reactor program and the industrial development of high-energy accelerators."

General Hastings, who announced plans to construct the pilot plant, said that "although radiation sterilization is not yet a commercial reality, the possibilities for the future are most encouraging. Today we know that the need for a successfully irradiated food product does exist within the Department of Defense.

"Irradiation can eradicate all living contamination occurring in food with no more than a few degrees rise in its temperature. This process allows irradiated food to be stored unrefrigerated for extended periods of time without danger of spoilage. All evidence indicates that irradiated food is wholesome. Different foods react differently when treated by irradiation. Cost factors are reasonable."

The Army Quartermaster Corps is conducting this research for the Armed Services in collaboration with the Atomic Energy Commission, the Department of Agriculture, the National Academy of Sciences, the Office of The Surgeon General, the Chemical Corps, and other government agencies. Scores of universities and industrial firms are also engaged under contract with Quartermaster Corps.

MACHINES which administer a beating to packages and containers—including a revolving hexagonal drum, an incline impact test machine and a crate compressor—are used by the Engineer Research and Development Laboratories, Fort Belvoir, Virginia, to study techniques for preserving equipment and materials from deterioration and damage during transportation. The drum simulates shocks and stresses of a container subjected to rough handling during shipment. Next the container is shoved down the incline tester which determines its ability to withstand impact stresses at speeds up to 8 miles an hour. The crate compression test machine applies loads up to 100 tons to the faces and to diagonally opposite edges or corners of the container. All three machines are used by the ERDL Packaging Development Laboratory to test fiberboard, wood and metal boxes, chests and crates.



# PARAGRAPHS

from



## The Pentagon and the Field

Beginning 1 August, the Army Antiaircraft Artillery Command at Colorado Springs, Colorado, will assume direct control of personnel assigned to conventional type and Guided Missile AAA units in the United States. Functions which the AAA Command will now assume include: processing of category renewals for Reserve officers on active duty; overseas voluntary applications; enlisted promotions; and intracommand transfers.



*More than 1,200 military personnel and 76 prominent business and industrial leaders attended the Army phase of Joint Civilian Orientation Conference Number 20 at Fort Benning, Georgia, this spring. This annual conference is designed to acquaint civilian leaders with the state of training of the Armed Forces and to demonstrate present-day Infantry firepower and tactical concepts.*



Four thousand soldiers of the 85th Infantry Regiment and attached units at Fort Riley, Kansas, are being given 17 different types of tests to determine aptitudes and abilities. After a year of duty, performance of each will be evaluated to see which tests best predicted their success or failure. Results of the study will be used to improve the Aptitude Classification Battery now administered at Reception Stations.



*"The Women's Army Corps" is the latest volume to be published in the historical series dealing with the United States Army in World War II. It was*

*written by Mattie E. Treadwell, who served with the Women's Army Auxiliary Corps and later with the Women's Army Corps. The volume deals with the period from May 1941, when a bill providing for establishment of the WAAC was introduced in Congress, to the period of demobilization.*



All civil affairs, military government responsibilities and staff functions performed in the past by the Provost Marshal General of the Army have been transferred to the Army's Office of the Chief of Civil Affairs and Military Government.

Civil affairs and military government functions conducted at The Provost Marshal General's School, Camp Gordon, Georgia, have been redesignated the Civil Affairs/Military Government Department. The Provost Marshal General's School, and will be under the direction of the Chief of Civil Affairs and Military Government, Department of the Army. Administrative and logistical facilities will be provided by The Provost Marshal General Center.



*Production of 8-inch shells by the hot-cup, cold-draw method will begin late in 1956 under a contract recently awarded by the Army Ordnance Corps. Hitherto this method has been used only in production of 105-mm. shells. In practice, a "cup" is first formed out of a hot blank and is then cold-drawn in successive stages. Because of the fewer number of operations involved, this method is less costly than the hot-forging technique previously employed.*

Following trials conducted by the U.S. Olympic Committee, four Army members have been selected to represent the United States in the Winter Olympic Games to be held 26 January to 5 February 1956 at Cortina, Italy. Army participants will be Pvt. Brooks Dodge, Garmisch Sub Area, USAREUR, and Pvt. Ralph Miller, Fort Carson, Colorado, in Alpine skiing; and Capt. Hubert Miller, 69th Infantry Division, Fort Dix, New Jersey, and Sgt. Patrick Biesidecki, Garmisch Sub Area, USAREUR, in bobsledding.



*Joining in the fight against cancer, the Materials Laboratory of the Corps of Engineers Research and Development Laboratories is testing many chemical compounds to determine their antifungal activity. The compounds then are shipped to Sloan Kettering Institute for Cancer Research in New York, where they are screened as possible anticancerous agents.*



Qualified enlisted personnel on active duty, regardless of grade, may apply through their commands for appointment to warrant officer grade. Shortages now exist for some 600 warrant officers who will be appointed in the Army Reserve and National Guard with concurrent call to active duty during Fiscal Year 1956. Appointments will be made in the following military occupational specialties: Master or Mate; Marine Engineer; Helicopter Pilot; Artillery, Electronic Fire Control; Guided Missile, Integrated Fire Control; Guided Missile, Materiel Assistant; Fire Control Maintenance and Repair; Guided Missile Maintenance and Repair; Aircraft Maintenance Officer; Engineer, Maintenance and Repair; and Weather Officer. Individuals holding appointments as commissioned officers may submit applications for appointment and concurrent active duty and will, if otherwise qualified, be appointed temporary AUS warrant officers in order that they may retain their appointments as commissioned officers in the reserve. Details are contained in Army Circular 601-6.

*A new instrument that can predict the life of a dry cell battery has been developed by the Signal Corps. While devices for measuring the condition of a battery have been in existence for a long time, these systems can give only an indication at the moment of testing. They cannot predict whether or not a battery will last five minutes or five hours.*

*The device developed by Signal Corps engineers is calibrated so that the current output of a brand new battery reads 100 percent. For older batteries a percentage reading is obtained which represents the remaining life of the battery.*



With the recent activation of Headquarters and Headquarters Companies for two transportation battalions (helicopter), the Army has started a program of training for helicopter unit personnel. Members of the 45th Transportation Battalion (Helicopter) at Fort Sill, Oklahoma, and the 71st Transportation Battalion (Helicopter) at Fort Riley, Kansas, will train Army personnel for assignment with helicopter units.

They will also conduct demonstrations for Artillery School students to familiarize them with the Army's technique of "air mailing" artillery to new positions via helicopter. Use of the helicopter for moving 105-mm. howitzers was developed at Fort Sill, and the method will be expanded and improved as larger helicopters become available.

Pilots for the new units will be rated personnel who have earned their wings at the Army Aviation School, Camp Rucker, Alabama. These pilots will receive transition and unit training on larger and heavier cargo and transport type helicopters at Fort Sill and Fort Riley.



*Army members scheduled for overseas movement should determine their household goods and other property needs prior to departure. Only that property marked for overseas shipment will be shipped, and the member will not be permitted to have a "stand-by" package ready for later dispatch to his new duty station. Re-*



quirements in any particular oversea area may be obtained by writing to the applicable oversea command.

Those members planning to take ammunition overseas are reminded that such shipments are limited to 100 pounds. Ammunition must be packed separately and marked in accordance with current regulations and carrier tariffs. After processing by the transportation officer at the port of embarkation, it is turned over to the ship's master or transport commander for safekeeping during the voyage. Ammunition may not be packed with clothing or as part of hold baggage.



Although the \$12 per diem rate authorized by the Career Incentive Act of 1955 was welcomed by all military personnel traveling on temporary duty, misunderstandings have arisen because the rate is not payable in every instance of travel.

In an effort to clear up these misconceptions, the Army's Chief of Finance has given the following information governing temporary duty travel:

The new maximum rate was implemented, effective 1 April 1955, by paragraph 4205, Joint Travel Regulations.

The per diem at the rate of \$12 is not, generally speaking, payable for periods of actual travel as distinguished from temporary duty or delays incident to modes of transportation. While traveling, the member will receive a \$9 per diem rate under applicable provisions of the Regulations.

The \$12 rate is payable for the day of arrival—as well as for a period of not to exceed 30 days thereafter—at a temporary duty or delay point at which Government quarters are not available or, in some instances, not utilized.

The per diem rate of \$12 is also payable for similar periods to members pursuing courses of instruction, but only in the event both Government quarters and mess are not available.

The per diem rate of \$9 prescribed for travel to, from, and between points outside the United States has not been increased.

The Chief of Finance emphasizes that this information is general in nature. Because of the many situations and factors involved, each person should check the Joint Travel Regulations, or consult with his Finance Officer on individual questions.

Under the Army's new Emergency Reinforcement Plan, officer and enlisted personnel released from active duty with eight-year obligations will be designated for specific assignments in event of a mobilization. Those so designated will be among the men who are not participating as members of reserve component units. They will be designated for three-year periods as reinforcements to active Army units or installations, and to National Guard and Army Reserve units located as near their homes as practicable.

The reinforcement designations can be terminated by enlisting in the Regular Army or a National Guard unit, or volunteering for assignment to an Army reserve unit with the objective of full and active participation. It is emphasized that reinforcement designations are not "assignments." Men so designated will not become organic parts of their respective organizations, but are merely being preselected for assignments on or after M-Day when the unit and individuals are ordered to active duty.



As a result of coordinated planning and efforts by the Office of the Surgeon General and the Signal Corps Plant Engineering Agency, a new type electronic communication known as the "Audio-Visual Nurse Call System" has been adopted and is now being utilized in seven U. S. Army Hospitals.

Besides saving doctors' and nurses' time, the system makes possible improved care of patients. Sensitive speaker-microphones enable the nurse to "listen-in" to each room or patient area to quickly locate and attend to any patient who may be in distress. Since the system allows the patient to communicate with the ward nurse at any time, in effect it provides him with the equivalent of a private duty nurse.



In dedication ceremonies held 22 June, the headquarters building of Army Information School at Fort Slocum, New York, was formally named Barrett Hall in honor of the late Lieutenant Colonel Myron K. Barrett, editor of ARMY INFORMATION DIGEST from October 1950 until his death on 16 November 1954.

First presentation of the General George S. Patton, Jr. Triathlon Trophy—named in honor of the officer who was the first U. S. representative in the modern pentathlon event in Stockholm, Sweden, in 1912—was made to First Lieutenant David C. Miller, winner of the 1954 All-Army Triathlon Competition, in recent ceremonies at the Pentagon. Lieutenant Miller represented Third Army in the first All-Army Triathlon Championship at Fort Devens, Massachusetts, in 1954.

The Army Triathlon, adapted from the modern pentathlon and instituted as a part of the All-Army sports program in 1954, includes 45 caliber pistol shooting, 220-yard freestyle swimming, and the two-mile run.



A new electronic machine named Bizmac (from business machine) is being installed at the Ordnance Tank-Automotive Command of Army Ordnance Corps in Detroit to report on parts inventories. In three or four minutes, it will accurately determine the supply level of any one of 170,000 different automotive parts stocked in Ordnance depots across the country.



At the 1955 Interservice Boxing Championship held at Oakland Army Base, California, in April, the Army won the

team championship, thereby regaining the title held in 1953. The Army scored 30 points; Navy was second with 29 points, Air Force third with 16, and Marine Corps fourth with 5. Capacity audiences of approximately 7,000 attended the two-day tournament which received extensive television coverage on the Pacific Coast.



At the Sanitary Engineering Laboratory of the Engineer Research and Development Laboratories, Fort Belvoir, Virginia, it's not "River stay 'way" but "Come right in." Purification of Potomac water pumped into its experimental equipment provides an excellent test for the equipment and methods being developed there for troop use. Improvements resulting from study of water purification processes are incorporated in field water supply equipment.



Shortages exist in certain grades in the Artillery and Signal Corps, Department of the Army Circular 614-1 announces. Officers will be considered for acceptance by the Artillery branch provided age does not exceed—lieutenant colonel, 39; major, 35; captain, 31; first lieutenant, 28. Minimum qualifications for the Signal Corps in grades ranging from colonel to first lieutenant are primarily an academic background or experience in fields of engineering, physics, equipment maintenance, supply, and several others.

## Official Notes

**CHARACTER GUIDANCE.** AR 15-120 designates members of the Department of the Army Character Guidance Council and lays down suggestions for similar action on the part of commanders for all installations of battalion size or larger. The Character Guidance Program has been devised to assist the commander in promoting a healthy moral and mental attitude on the part of personnel under his command. Under it, the Army endeavors to insure the continuance of the wholesome influence of the home, the family, and the community.

**RELEASE AND TRANSFER.** AR 635-250 sets forth administrative procedures for relief from active duty and transfer to the Army Reserve, or release to the Army Reserve or National Guard, of enlisted personnel who have a service obligation under the Universal Military Training and Service Act; and for release to the reserve components those members thereof who at time of relief from active duty have no service obligations but who have a portion of a current period of enlistment remaining.

**APPOINTMENTS AND REDUCTIONS.** AR 624-200 provides for appointments, both permanent and temporary, to enlisted grades; and for reductions from grade. It applies to all enlisted personnel in active Federal service regardless of the method by which the individual entered the enlisted ranks.

**CATEGORY COMMITMENTS.** AR 135-215 eliminates category commitments as a means of personnel accounting, effective upon the expiration of current commitments. Together with Circular 135-6 the regulations establish the system under which officers of the Reserve components serve on active duty. Officers serving in an Obligated Status are to submit not earlier than 8 months nor later than 3 months prior to scheduled date of release from active duty, an application to remain on active duty subsequent to completion of obligated tour, or a statement of declination. Circular 135-6 lists optional period dates for submission of such applications by officers whose category commitments end in 1957.

**TRAVEL ALLOWANCE ADVANCES.** AR 35-3110 details conditions under which travel allowances for members of the uniformed services are authorized to be paid in advance.

**TITLE CHANGE.** Section III of Department of the Army Circular 144 changes the title of the Office of Executive for Reserve and ROTC Affairs to Office of the Chief, Army Reserve and ROTC Affairs.

**HELICOPTER PILOT TRAINING.** AR 611-85 establishes procedures for selection of volunteers for training as helicopter pilots.

**UNIFORM FOOTWEAR.** Department of the Army Circular 670-2 calls attention to regulations governing proper color of footwear. Commanders will insure that the practice of improperly dyeing leather is discontinued. Color of footwear—russet for boots, tan for low quarter shoes—will conform as closely as possible to the original color of the leather at time of issue.

**RESERVE RETIREMENT RECORDS.** AR 140-185 prescribes the standards and procedures for crediting retirement points for Army Reserve service and for informing each reservist of the points earned.

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## ***Balloon-Wheeled Teracruzer***

DEVELOPED in cooperation with Army Ordnance Corps, a huge, new, experimental cargo and personnel carrier which rides on rubber "pillows" instead of tires was recently demonstrated before representatives of all the defense services at Clintonville, Wisconsin.

Named the "Teracruzer" to distinguish it from an earlier, basic design called the "Rolligon," the new vehicle is larger than its predecessor. It is 12 feet wide, 25 feet long, and 10 feet high, and has eight traction bags compared with the Rolligon's three.

Greatest advantage of this type of vehicle is its ability to negotiate any type of terrain. The eight 3½- x 5-foot bags are inflated with only three to five pounds air pressure and their traction surfaces are extremely broad. As a result, driving through sand, snow, marsh, ice, up steep inclines and along difficult side slopes is positive, safe, and comfortable.

POWERED by a 340 horsepower Continental engine, the Teracruzer has a gross weight of 40,000 pounds and a load capacity ranging from seven to ten tons. A central inflation system enables the driver to increase or reduce air pressure in individual bags while en route.

The vehicle was designed and built by the Four Wheel Drive Auto Company in cooperation with Army Ordnance Corps. Pneumatic tire bags were developed by Goodyear Tire and Rubber Company from the Rolligon principle invented by William H. Albee. They are four-ply nylon with chevron-patterned, half-inch-high lugs.

The Teracruzer is scheduled for a series of tests to appraise its value as a military vehicle.

*(For pictures of the Teracruzer, see back cover.)*

